Choosing Solitude: Age Differences in Situational and Affective Correlates of Solitude-Seeking in Midlife and Older Adulthood

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Abstract

Objectives: Despite a basic need for social connection, individuals across the adult lifespan sometimes seek solitude – a phenomenon that is not well understood. This study examined the situational and affective correlates of solitude-seeking and how they may differ between middle-aged and older adults. **Method:** 100 community-dwelling adults aged 50-85 years (64% female, 56% East Asian, 36% European, 8% other) completed approximately 30 electronic daily life assessments over 10 days regarding their current location, affect, activities, and current and desired social context. **Results:** Solitude was common; 86% of solitude instances happened by individuals' own choosing. When desiring solitude, older adults were more likely to be at home and less likely to be outdoors, compared to other locations. Middle-aged adults showed no such solitude-location associations. Among middle-aged adults, desire for solitude was associated with decreased positive affect. Older adults experienced no such dip in affect. **Discussion:** Findings suggest that compared to middle-aged adults, older adults are more likely to go to locations that match their desired social context, and also that solitude-seeking has more positive ramifications for older adults. Findings are discussed in the context of age differences in activities, social preferences, and emotion regulation.

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Introduction

We need social contact to thrive (Cohen, 2004; Hoppmann & Gerstorf, 2016), but this does not mean we need, or want, to interact with others all the time. Individuals sometimes choose to spend time by themselves (Burger, 1995; Leary, Herbst, & McCrary, 2003; Long & Averill, 2003), for example, spending an evening home alone or going on a hike with everyone immersed in their own thoughts. Solitude is defined as the absence of social interaction (Burger, 1995; Larson, 1990): an objectively defined situation without any specific emotional connotations. Loneliness, in contrast, is a negative emotional experience resulting from a perceived lack of social relations (Perlman & Peplau, 1981). Previous research on solitude has largely focused on the negative experiences that go along with loneliness (Ernst & Cacioppo, 2000). Little is known about instances when individuals seek out solitude (Long, Seburn, Averill, & More, 2003). This study focused on situational and affective correlates of solitude-seeking in midlife and older age, a phase in life when people spend a significant amount of time alone (Larson, 1990). We used approximately 30 electronic daily life assessments collected over a 10-day period from 100 community-dwelling adults aged 50-85 years.

Solitude is a ubiquitous experience in midlife, and even more so in older age (Larson, 1990). Percentage of time spent alone ranges from 48% in samples aged 65 years and above to 71% in the oldest old (Chui, Hoppmann, Gerstorf, Walker, & Luszcz, 2014; Larson, Zuzanek, & Mannell, 1985). Solitude is a problem only to the extent that it is experienced as lonely or isolating (Cohen, 2004; Hawkley, & Cacioppo, 2010). Across the adult lifespan, individuals actively seek out solitude in daily life (Burger, 1995; Leary et al., 2003; Larson, 1990) to escape

social pressures, to work, or to relax (Long et al., 2003; Pauly, Lay, Nater, Scott, & Hoppmann, 2016). When solitude occurs by one's own choosing, it is experienced more positively than when it is undesired (Lay, Mahmood, Pauly, & Hoppmann, 2016; Long & Averill, 2003). Building on this assertion, this study investigated how much of the everyday solitude that middle-aged and older adults experience happens by choice, and how solitude-seeking is linked with time-varying situational characteristics and affective experiences.

Solitude-Seeking and Situation Selection

Most everyday solitude occurs at home (approximately 55-72%), followed by outdoor spaces (approximately 25%; Larson, Csikszentmihalyi, & Graef, 1982; Long, 2000). The comfort of one's home may allow individuals to be "off-stage" and recharge, whereas the outdoors may be conducive to spirituality and inner peace (Long, 2000). However, individuals may avoid seeking solitude in public places like cafés because social interaction expectations are stronger in public settings (Goffman, 2008; Long, 2000). We therefore expect that individuals seeking solitude are more likely to be at home or outdoors as compared to other places.

Solitude-Seeking and Affective Experiences

Solitude, defined by the absence of social interaction, is an objective state that may be linked to specific feelings; likewise, solitude-seeking may be associated with distinct affective states (Burger, 1995; Larson, 1990). Research examining time-varying social context-affect associations across the adult lifespan has shown that moments spent alone are associated with elevated negative affect and loneliness, and lower positive affect, compared to moments spent with others (Chui et al., 2014; Larson, 1990; Pauly et al., 2016). Furthermore, experimental work has linked solitude with a reduction in high arousal affective states (Nguyen, Ryan, & Deci, 2017), whereas time-sampling work has shown stronger links with low arousal affect (e.g. Pauly

et al., 2016). Hence, both valence and arousal matter, but results are mixed. Previous research has further shown that individuals seem to seek solitude when feeling anxious, sad, or low in energy, potentially as a means of coping (Brown, 1992; Long & Averill, 2003). Importantly, research on the affective correlates of solitude *desire* is sparse; we address this research gap by examining the affective correlates of everyday solitude-seeking. Specifically, we expect that, like solitude itself, solitude-seeking is associated with lower concurrent positive affect and elevated negative affect, relative to social interaction-seeking. Given the particular relevance of loneliness to time in solitude, we also explore associations between solitude-seeking and momentary loneliness.

Solitude-Seeking in Midlife and Older Adulthood

Solitude is particularly common in older adulthood (Larson et al., 1985). Interestingly, older adults experience solitude more positively than middle-aged or young adults - as indicated by less pronounced decreases in high arousal positive affect and less pronounced increases in low arousal negative affect and loneliness when alone (Chui et al., 2014; Larson et al., 1985; Larson, 1990; Lang & Baltes, 1997; Pauly et al., 2016). This age difference may be due, at least in part, to older adults' social preferences and increased emotion-regulation abilities. Prominent aging models like socioemotional selectivity theory posit that older adults strive to optimize their well-being by selectively focusing on emotionally meaningful social interactions (Carstensen, Fung, & Charles, 2003). Consequently, older adults may proactively seek out solitude to 'escape' meaningless or unpleasant social situations. Older adults may also have fewer work-related constraints on their time than middle-aged adults, allowing them more freedom to decide when and where to seek solitude. Such life-phase differences might make it more likely that older adults seek solitude for leisure (and hence enjoy this experience), and that middle-aged adults

seek solitude to focus on work (which may be less enjoyable). We expect that older adults may be more likely to actively seek out locations that allow them to have a moment to themselves when they desire it, and that they may also experience this solitude-seeking more positively, than middle-aged adults.

Current Study

This study examined situational (location) and affective correlates of solitude desire in midlife and older adulthood. Extending previous research using retrospective self-reports of solitude-seeking in younger samples (Chua & Koestner, 2008; Long et al., 2003), we used up to 30 repeated daily life assessments over 10 days ('time-sampling', Bolger, Davis, & Rafaeli, 2003; Hoppmann & Riediger, 2009) to capture everyday solitude-seeking experiences in a sample of middle-aged and older adults. This design enabled us to examine naturally-occurring solitude-seeking as participants went about their daily routines in their own environments and to minimize self-report biases arising from retrospective designs (Bolger et al., 2003). We expected that participants would seek solitude at home or outside more than in other places. We also hypothesized that solitude-seeking would be associated with increased negative affect and decreased positive affect, compared to times when individuals desired social interaction. Given evidence of the importance of affect valence as well as arousal, models distinguished between high and low arousal forms of positive and negative affect, as well as loneliness, although no arousal-specific hypotheses were developed. We also expected age differences in location and affective correlates of solitude-seeking. Specifically, we expected older adults to be more likely to be at home or outdoors when seeking solitude than middle-aged adults. Similarly, we expected older adults to show weaker solitude desire-affect associations (less pronounced decreases in positive affect, and less pronounced increases in negative affect) than middle-aged adults.

Methods

Participants

The sample consisted of 100 community-dwelling adults aged 50-85 years (M = 67.0, SD = 8.7) from Metro Vancouver: 64% female, 72% post-secondary educated, 76% retired, 57% in a relationship, 56% of East Asian heritage, 36% of European heritage, 8% of other/mixed heritage, and 65% having little or no experience using tablets. Participants reported good health (M = 3.2 on 5-point scales). Six additional participants did not complete the study due to time constraints (4) or device difficulties (2). They were less likely to have post-secondary education ($X^2(1) = 5.58$, $p = .018$). Two participants' data were lost due to technical issues. Participants received up to CAD $100 or an iPad mini. The study was approved by the University of British Columbia Behavioural Research Ethics Board.

Procedure

This study was part of a larger project on social engagement and well-being in old age. Participants completed a baseline session, a time-sampling phase, an exit session, and a 6-month follow-up. At baseline, participants completed training on using tablets and individual difference measures (detailed below). For the next 10 days (time-sampling phase), participants were prompted three times daily to report their current affect, location, activities, and actual and desired social context using an iPad mini app (iDialogPad; G. Mutz, Cologne, Germany). Everyday surveys were scheduled in the morning, afternoon, and evening (with a minimum of 4 hours between assessments) at times that avoided conflicts with participants' predetermined commitments (e.g. work, appointments). Participants were beeped for each assessment but were able to open and complete questionnaires at any time. Each participant provided valid data for an average of 32.0 sampling occasions (SD = 10.1, range = 10-71). Several participants provided

data beyond the 10-day period, and those were also included in the reported analyses; retaining only the measurement points completed during the 10-day period (26.3 measurement points per participant, on average) did not change the reported findings. Participants also occasionally provided data between scheduled beeps. In cases when two questionnaires were completed within a 90-minute period (180 questionnaires, 3.8%), we discarded both questionnaires to omit any data that may not reflect momentary experiences (e.g. participants "correcting" their responses or making up for missed questionnaires). At the exit session, participants completed additional measures, including study feedback. Participants considered the 10-day time-sampling phase to be typical of their everyday lives (M = 3.5 on a 5-point scale) and perceived it as neither interfering with their routines (M = 1.8/5) nor changing their behaviour (M = 1.7/5). Six months later, participants attended another session to complete measures including perceived social status. Data was collected year-round (August 2014-December 2015). All materials were translated into Chinese and independently backward-translated for verification. We used previously-validated Chinese measures of affective states (Tsai, Knutson, & Fung, 2006) to minimize interpretation differences. Fifty-seven percent of participants completed the study in English, 28% in Mandarin, 15% in Cantonese.

Measures

Current affect. Nine items assessed current affective states on 100-point scales (0 = "Not at all", 100 = "Very much"). Items covered positively and negatively valenced high and low arousal states (Tsai et al., 2006): high arousal positive affect ("happy", "excited", M = 54.3, SD = 19.6), low arousal positive affect ("calm", "satisfied", M = 67.8, SD = 19.8), high arousal negative affect ("anxious", "irritated", M = 23.3, SD = 21.5), low arousal negative affect ("sad", "tired", M = 29.9, SD = 21.4), and loneliness ("lonely", M = 20.7, SD = 23.0; Russell, 1996).

Current location. Participants were able to choose between six current location options: "outside", "home", "public building", "other person's home", "traveling", "other". Participants reported being outside 7% of the time and at home 79% of the time.

Current activities. Participants reported their current activities by selecting one or more activities from the following eight options: "social activity", "physical activity", "passive leisure", "cognitive activity", "self- care or health care", "volunteering", "work", "other". Participants reported working 9% and passive leisure 33% of the time. Passive leisure was defined as leisure that did not involve any physical activity (e.g. reading, relaxing).

Current social context. Participants indicated their current social context by selecting one of three options: (a) interacting with someone (29.8% of sampling occasions), (b) others nearby but not interacting (26.3% of occasions), or (c) alone (43.9% of occasions; McAdams & Constantian, 1983). Occasions when participants selected (b) or (c) were coded as solitude (the absence of social interaction), and occasions when participants selected (a) as non-solitude. Solitude occasions when "social activity" had been reported for the current activities measure (231 instances) were then re-coded as non-solitude, to account for times when participants might have been chatting online or on the phone.

Current desire for solitude. Participants were again presented with the three social context options above and asked to indicate, "which of these situations would you most like to be in?" (McAdams & Constantian, 1983). Of the 3195 sampling occasions, 33.1% were times when participants desired social interaction (option a), 25.7% when they wanted others nearby but no interaction (option b), and 41.2% when they wanted to be alone (option c). Occasions when participants chose options (b) or (c) were coded as desire for solitude, and occasions when they chose option (a) were coded as desire not to be in solitude.

Covariates. We controlled for demographic variables (age, gender, ethnicity, education, retirement, and relationship status) and perceived social status (Adler & Stewart, 2007). Survey time was included as a time-varying covariate to control for time of day effects.

Statistical Analyses

We used multilevel modeling (R *lme4* package; Bates, Mächler, Bolker, & Walker, 2015) to account for the hierarchical data structure (momentary assessments nested within people). Logistic models were used for the two dummy-coded location outcomes: *currently at home* and *currently outside*. Linear models were used for the five affect outcomes: *high arousal positive affect*, *low arousal positive affect*, *high arousal negative affect*, *low arousal negative affect*, and *loneliness*.

Models included current solitude, solitude desire, work activity, passive leisure activity, time, and time squared at level 1 (momentary level), and person-averages of current solitude, solitude desire, work, and passive leisure at level 2 (person level). We included cross-level interactions of current solitude and current solitude desire with age, and level 1 interactions of current solitude desire with current working, passive leisure, time, and time squared. Several level 2 covariates were included. Further model details are provided in *Supplementary Materials: Data Analytic Approach*.

Results

Descriptive Statistics

Participants completed 3195 time-sampling assessments, 63.0% of which were solitude occasions (n = 2013; M = 19.5 per participant, SD = 9.7, range = 1-69). Most solitude (85.8%) was desired (wanting to be alone: 55.3%, wanting others nearby without interaction: 30.5%). Hence, solitude was a common phenomenon in this sample, and usually occurred by choice.

Solitude and solitude-seeking were most likely to occur in the early morning (before 7am) or evening (after 6pm).

When in solitude, participants were less likely to be outside, more likely to be at home, and more likely engaged in passive leisure, and they reported less high arousal positive and negative affect (*Supplementary Materials, Table 1*). These same patterns emerged for solitude desire. Solitude desire was also associated with reduced low arousal negative affect and loneliness. At the person level, average time in solitude and desire for solitude were positively correlated (*Supplementary Materials, Table 2).* Individuals who reported more solitude and more solitude desire spent more time at home and less time outside. Solitude desire was negatively associated with loneliness. Age was not significantly associated with solitude or desire for solitude, but older adults spent more time at home and less time working, and they reported less low arousal negative affect than middle-aged adults. Please see *Supplementary Materials (Table 3)* for age group base rates.

Solitude-Seeking and Situation Selection in Midlife and Older Adulthood

We first examined time-varying solitude desire-situational context associations and potential age differences therein. Models predicted log-odds of being in certain locations (see *Table 1*). Current solitude (as compared to non-solitude) was associated with 5.1 times greater odds of being at home and 3.2 times greater odds of *not* being outside at that moment.

As expected, currently desiring solitude was also associated with being at home, specifically, a 1.7 times greater likelihood of being at home, compared to times when desiring social interaction. This solitude desire-home association was most pronounced at the beginning and end of each day (as indicated by significant linear and quadratic time effects). It was also moderated by age. Simple slopes analyses (*Figure 1a*) revealed that older adults (individuals 1

SD above the mean age, 75.8 years) were more likely to be at home when desiring solitude (*b simple slope* = 0.83, *SE* = 0.24, 95% CI [0.35, 1.31]); this was not the case for middle-aged adults (individuals 1 *SD* below the mean age, 58.4 years; *b simple slope* = 0.05, *SE* = 0.21, 95% CI [-0.36, 0.46]). There was no overall association between solitude desire and being outside. However, there was a cross-level interaction between age and momentary solitude desire, with a significance value of .05. As illustrated in *Figure 1b*, older adults desiring solitude were less likely to be outside (*b simple slope* = -0.97, *SE* = 0.44, 95% CI [-1.82, -0.12]); this was not the case for middle-aged adults (*b simple slope* = 0.21, *SE* = 0.22, 95% CI [-0.23, 0.65]). To summarize, older adults who desired solitude were more likely to be at home and less likely to be outside. There was no such solitude desire-location association in middle-aged adults.

We compared model deviances for the full and the reduced models that excluded current and person-average solitude desire. Solitude desire improved the fit of the "home" model, as indicated by significant deviance reduction (*Table 1*).

Solitude-Seeking and Affective Experiences in Midlife and Older Adulthood

We next examined the affective correlates of momentary solitude desire, and age differences in these associations (*Table 2*). Current solitude (as compared to social interaction) was associated with decreased high arousal positive affect and elevated loneliness. There were no main effects of current solitude *desire* on any affect outcomes. However, cross-level interactions indicated that currently desiring solitude (as compared to desiring social interaction) was associated with decreased high arousal positive affect in middle-aged adults (*b simple slope* = -2.45, *SE* = 1.11, 95% CI [-4.64, -0.27]); there was no such solitude desire-affect association in older adults (*b simple slope* = 1.56, *SE* = 1.16, 95% CI [-0.72, 3.83]; see *Figure 1c).* Findings pertaining to low arousal positive affect showed a similar pattern. For middle-aged adults, there

was a marginally significant association between solitude desire and reduced low arousal positive affect (*b simple slope* = -2.00, *SE* = 1.19, 95% CI [-4.33, 0.34]), but this was not the case for older adults (*b simple slope* = 1.49, *SE* = 1.24, 95% CI [-0.94, 3.92]). Middle-aged adults currently desiring solitude reported lower levels of positive affect, but older adults did not. Counter to expectations, no solitude desire-age interactions emerged for high or low arousal negative affect or loneliness.

Individuals who desired more solitude were less lonely, and participants of East Asian heritage reported more loneliness than those of European heritage. Individuals engaged in passive leisure while solitude-seeking reported increased low arousal positive affect. The inclusion of current and person-average solitude desire improved model fit for low arousal positive affect, high and low arousal negative affect, and loneliness (*Table 2*).

Discussion

This study examined situational and affective correlates of everyday solitude-seeking in middle-aged and older adults. Counter to expectations, older adults did not spend more time in solitude than middle-aged adults, nor did they desire it more. In line with general expectations, older adults (and not middle-aged adults) were more likely to either be at home or not outdoors when seeking solitude. Furthermore, whereas middle-aged adults experienced a dip in high and low arousal positive affect when seeking solitude, older adults did not. Findings are discussed in the context of the lifespan developmental and emotion regulation literatures.

Solitude-seeking in Midlife and Older Adulthood

Solitude (the absence of social interaction) was common in our sample and typically happened by participants' own choosing. Participants were in solitude at about two-thirds of the beeps, a rate similar to that reported in previous research in a comparable age group (Larson et

al., 1985). Notably, solitude occurred primarily by choice, extending previous evidence from younger samples (Chua & Koestner, 2008; McAdams & Constantian, 1983).

Unlike previous research (Klumb, 2004; Larson, 1990; Pauly et al., 2016), there was no evidence of age-related differences in solitude or solitude-seeking. This could be due to the sample's restricted age range (50-85 years); participants may have shared more experiences (e.g. empty nest) than lifespan samples in other studies. Moreover, as participants were required to use tablets, they were relatively healthy, with little physical or cognitive impairment. They may also have had more control over social contexts than lower-functioning older adult samples (who may be at home more due to common age-related conditions or mobility limitations). Finally, our definition of solitude differs slightly from those used in previous time-sampling research (Klumb, 2004; Larson, 1990; Pauly et al., 2016) in that it does not necessitate the physical absence of other people. It may be that time *alone* increases with age but time in *solitude* (the absence of social interaction) does not.

Solitude-Seeking and Situation Selection in Midlife and Older Adulthood

Where do individuals go when they want time to themselves? Solitude and solitude-seeking varied by time of day, peaking in the morning and evening, when individuals were typically at home. Middle-aged and older adults were more likely to be at home during solitude, and older adults were also more likely to be at home when desiring solitude. These findings dovetail with previous research indicating that home is a place where individuals seek privacy and social reprieve (Brown, 1992; Long et al., 2003). We expected that the outdoors would also be a prime location for solitude and solitude-seeking, but found the opposite. When in solitude, middle-aged and older adults were less likely to be outdoors. Older adults *seeking* solitude were also less likely to be outdoors than when not seeking solitude. This divergence between our

findings and previous evidence may be due, in part, to age differences. Previous findings on solitude-seeking in nature (e.g. Long et al., 2003) are based exclusively on university student samples. Given that older adults are more likely to live alone than young adults (Statistics Canada, 2012), going outside may be an important avenue for them to connect rather than to be alone. This finding reinforces the need for a lifespan developmental approach to solitude and solitude-seeking, as findings from student samples may not generalize to later life phases. All participants lived in an urban environment close to both quiet (e.g. parks) and congested public spaces (Chaudhury et al., 2011). Further research is needed to examine how neighbourhood characteristics (e.g. urban versus rural) shape individuals' propensity to seek solitude outdoors.

Older adults were more likely to be at home or indoors when seeking solitude, but middle-aged adults showed no such location-specificity in solitude-seeking. This may be because older adults spent more time at home and less time working than middle-aged adults, in line with the idea that older adults might have more control over their social contexts due to reduced work obligations. Indeed, previous research suggests that older adults feel more autonomous and in control when in solitude (Larson et al., 1985; Lang & Baltes, 1997). Such age differences in location-seeking may also reflect an underexplored implication of socioemotional selectivity theory (Carstensen et al., 2003): Compared to middle-aged adults, older adults may have less tolerance for social interactions that do not serve their socio-emotional goals. Hence, when solitude seems like a better option than socializing, older adults may be more proactive in seeking solitary spaces.

Solitude-Seeking and Affective Experiences in Midlife and Older Adulthood

All participants reported reduced high arousal positive affect and increased loneliness during solitude compared to social interaction. This aligns with previous research linking

solitude with decreased happiness and high arousal positive affect, and increased loneliness (Larson, 1990; Nguyen et al., 2017; Pauly et al., 2016).

Desiring solitude (as compared to desiring social interaction) was associated with decreased high and low arousal positive affect – but only for middle-aged, not older, adults. Whereas older adults' positive affect was maintained when desiring solitude, middle-aged adults showed a decrease in positive affect. This aligns with previous findings showing that, compared to their younger counterparts, older adults show more emotional stability (Röcke, Li, & Smith, 2009) and more motivation to actively maintain positive affect in daily life (Riediger, Schmiedek, Wagner, & Lindenberger, 2009). We speculate that positive affect maintenance while solitude-seeking might also reflect older adults' enhanced emotion regulation skills (Isaacowitz & Blanchard-Fields, 2012). Social situation selection may be a particularly effective emotion regulation strategy for older adults because it capitalizes on cognitive and social resources that remain intact in old age (Urry & Gross, 2010). Life phase might also help explain why only middle-aged adults experienced a positive affect dip when solitude-seeking. Due to greater work-related obligations and time spent away from home, middle-aged adults might be less able than older adults to escape to desired solitary locations, making solitude-seeking less pleasant. Notably, both middle-aged and older adults experienced greater levels of low arousal positive affect when solitude-seeking coincided with passive leisure, suggesting that seeking solitude for relaxation may be particularly beneficial.

Solitude desire-age interactions were linked with positive affect only; we found no similar associations with negative affect or loneliness. This may be because older adults pay more attention to positive than to negative information (Mather & Carstensen, 2005) and, hence, may be more attuned to positive than negative aspects of solitude-seeking. Our finding also

underscores the importance of disentangling positive from negative affect using unipolar affect scales (Pauly et al., 2016) rather than bipolar scales (such as "happy—sad"), which are common in research on social context and solitude (e.g. Larson et al., 1985).

Individual difference associations with loneliness also emerged. Individuals who desired solitude more tended to feel less lonely, underscoring the difference between solitude-seeking and loneliness. Furthermore, individuals of East Asian heritage felt lonelier than those of European heritage. As many East Asian participants were immigrants, their higher loneliness might reflect lower social integration or being unaccustomed to societal norms in individualistic North American culture, having come from more collectivistic cultures (Stewart et al., 2011; Triandis, 1988). Further research is needed to disentangle cultural and immigration effects on loneliness and solitude.

A key strength of this study is the inclusion of participants of diverse backgrounds. The study was offered in Chinese and English because nearly 30% of the Vancouver population is of East Asian heritage, with ~15% primarily speaking a Chinese dialect. We also conducted sessions in the community to reduce participation barriers for individuals who are less well-represented in aging research, such as recent immigrants and those of lower socioeconomic status. Indeed, 68% of participants were born outside Canada and approximately 50% had an annual income below the governmental low-income threshold.

Limitations

Solitude-seeking and affect were assessed concurrently; our findings therefore do not allow causal inferences. Conceptually, it makes sense that solitude-seeking leads to decreases in positive affect, but it is also conceivable that decreases in positive affect might motivate individuals to seek solitude (Brown, 1992). In this study, most solitude-seeking (81%) happened

when participants were already in solitude, hence, it seems more likely that affective states were a response, rather than an antecedent, to one's current situation. One way to test this would be to examine lagged effects. However, our sampling frame (4+ hours between assessments) was not fine-grained enough to examine such processes; situation selection and affective change in response to solitude-seeking may occur within minutes, and affective responses may hence dissipate before the next assessment.

We chose our sampling frame to capture snapshots of daily life solitude-seeking while minimizing participant burden. This design resulted in high compliance: Participants completed 88% of scheduled assessments (a rate similar to those in previous time-sampling research; Green, Rafaeli, Bolger, Shrout, & Reis, 2006), and 75% of these within 90 minutes of being beeped. Participant-based adjustments in the timing of beeps could have resulted in over-sampling instances of solitude-seeking. However, solitude rates were similar to those reported in previous time-sampling studies using random sampling designs with middle-aged and older adults (Larson et al., 1982, 1985), which gives us confidence that we did capture naturally-occurring solitude-seeking.

Conclusions and Future Directions

Solitude may not always be negative and can provide space for emotional renewal (Long & Averill, 2003); the present study suggests that older adults may be particularly likely to benefit from solitude-seeking. Unlike middle-aged adults, older adults reported being in locations conducive to solitude, with no decrease in positive affect, when seeking solitude. Findings may reflect enhanced situation selection and emotion regulatory capacities in old age (Urry & Gross, 2010). Further research is needed to unpack underlying causal mechanisms. For example, one could manipulate solitude-seeking by having people pursue social interaction or solitude while

riding the bus (Epley & Schroeder, 2014) and measure subsequent affective change. Future research could also examine how personality variables (e.g. Extraversion; Burger, 1995) may shape solitude-seeking experiences. More work is needed to further explore potential benefits of everyday solitude-seeking, particularly in late life.

Declaration of Conflicting Interests

The authors declare no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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Tables

Table 1: Multilevel Models: Current Location by Solitude Desire. *N* = 95 Individuals, *n* = 3058 Assessments.

	Log-odds of being at home		Log-odds of being outside	
LEVEL 1				
Current solitude	1.64 *(0.20)****	[1.25, 2.04]	-1.16 *(0.38)***	[-1.90, -0.42]
Current solitude desire	0.52 *(0.18)***	[0.16, 0.87]	-0.54 *(0.37)*	[-1.26, 0.18]
Currently working	-0.08 *(0.22)*	[-0.51, 0.36]	-0.16 *(0.33)*	[-0.80, 0.49]
Current passive leisure	0.90 *(0.15)****	[0.60, 1.20]	-0.61 *(0.23)***	[-1.07, -0.15]
Time	-0.70 *(0.08)****	[-0.85, -0.54]	0.70 *(0.12)****	[0.46, 0.94]
Time squared	0.03 *(0.00)****	[0.03, 0.04]	-0.03 *(0.01)****	[-0.04, -0.02]
LEVEL 2				
Intercept	2.13 *(0.15)****	[1.84, 2.42]	-3.78 *(0.23)****	[-4.24, -3.33]
Person-average solitude	0.00 *(0.01)*	[-0.02, 0.01]	0.01 *(0.01)*	[-0.01, 0.03]
Person-average solitude desire	0.01 *(0.01)*	[-0.01, 0.02]	-0.01 *(0.01)*†	[-0.03, 0.00]
Person-average working	0.00 *(0.01)*	[-0.02, 0.02]	0.01 *(0.01)*	[-0.01, 0.03]
Person-average passive leisure	-0.01 *(0.01)*	[-0.02, 0.00]	0.00 *(0.01)*	[-0.01, 0.01]
Age (years)	0.03 *(0.02)*	[-0.01, 0.07]	-0.02 *(0.02)*	[-0.07, 0.03]
Ethnicity (1 = European)	-0.27 *(0.30)*	[-0.86, 0.32]	-0.22 *(0.37)*	[-0.94, 0.50]
Education	0.71 *(0.29)**	[0.14, 1.28]	-0.80 *(0.35)**	[-1.49, -0.11]
Gender (1 = female)	0.16 *(0.28)*	[-0.39, 0.71]	-0.58 *(0.33)*†	[-1.22, 0.07]
Retirement status	0.44 *(0.37)*	[-0.28, 1.17]	0.33 *(0.46)*	[-0.57, 1.22]

Relationship status	0.58 *(0.29)**	[0.02, 1.15]	-0.49 *(0.36)*	[-1.19, 0.21]
Perceived social status	-0.02 *(0.10)*	[-0.21, 0.17]	0.00 *(0.12)*	[-0.23, 0.23]
INTERACTIONS				
Age x Current solitude	0.01 *(0.02)*	[-0.03, 0.05]	0.00 *(0.03)*	[-0.06, 0.07]
Age x Current solitude desire	0.04 *(0.02)**	[0.00, 0.07]	-0.05 *(0.03)*†	[-0.10, 0.00]
Working x Current solitude desire	0.39 *(0.38)*	[-0.34, 1.13]	0.06 *(0.53)*	[-0.98, 1.10]
Passive leisure x Curr. solitude desire	-0.17 *(0.28)*	[-0.73, 0.38]	-0.02 *(0.42)*	[-0.85, 0.81]
Time x Current solitude desire	-0.40 *(0.14)***	[-0.69, -0.12]	0.09 *(0.22)*	[-0.35, 0.53]
Time squared x Curr. solitude desire	0.02 *(0.01)***	[0.01, 0.03]	0.00 *(0.01)*	[-0.02, 0.02]
DEVIANCE REDUCTION	***$X^2(10)$ = 25.06****		$X^2(10)$ = 14.09	

Note for Tables 1 and 2. Current solitude, solitude desire, working, and passive leisure coded 1 = reported that situation/activity, 0 = did not report situation/activity. Person-average = percentage of beeps when participant reported that situation/activity. Time is hours since 4am; ethnicity coded 1 = European, 0 = not European; education coded 1 = some post-secondary, 0 = no post-secondary; gender coded 1 = F, 0 = M; retirement and relationship status dummy-coded; perceived social status is on a 10-point scale. All variables were grand mean centered, coefficients unstandardized. 95% confidence intervals are shown. Location models used ML estimation, Laplace approximation; affect models used restricted ML. Deviance reduction compares full models to models that exclude solitude desire. Missing data for relationship (N = 2) and perceived social status (N = 5) were multiply imputed (predictive mean matching, R *mice* package; Buuren & Groothuis-Oudshoom, 2011); missing data for age (N = 5) was not imputed, resulting in a final N = 95. Models without control variables (gender, ethnicity, education, retirement, relationship status, perceived social status, time, time squared) show the same age x solitude desire moderations. Hence, we retain all control variables in the models to demonstrate the robustness of the reported findings. ***p < .001, **p < .01, *p < .05, †p < .1

Table 2: Multilevel Models: Current Affect Outcomes by Solitude Desire. N = 95 Individuals, n = 3058 Assessments.

	High arousal pos. affect	Low arousal pos. affect	High arousal neg. affect	Low arousal neg. affect	Loneliness
LEVEL 1					
Current solitude	**-2.44*(0.77)* [-3.95,-0.93]**	-0.75*(0.72)* [-2.17,0.67]	0.32*(0.87)* [-1.39,2.02]	0.40*(0.79)* [-1.14,1.94]	**2.99*(0.95)* [1.13,4.86]**
Current solitude desire	-0.45*(0.79)* [-2.01,1.10]	-0.25*(0.85)* [-1.92,1.41]	-1.11*(1.04)* [-3.15,0.92]	0.35*(0.93)* [-1.48,2.18]	-1.75*(1.01)* [-3.72,0.22]
Currently working	-1.09*(1.10)* [-3.26,1.07]	-0.33*(1.02)* [-2.32,1.67]	**3.81*(1.12)* [1.61,6.01]**	1.61*(1.12)* [-0.59,3.81]	1.68*(1.04)* [-0.37,3.73]
Current passive leisure	0.06*(0.68)* [-1.26,1.39]	0.98*(0.62)* [-0.24,2.20]	-1.12*(0.69)* [-2.46,0.23]	-0.01*(0.69)* [-1.35,1.34]	0.42*(0.64)* [-0.83,1.67]
Time	**0.94*(0.30)* [0.34,1.53]**	**0.33*(0.28)* [-0.22,0.88]**	0.28*(0.31)* [-0.32,0.89]	-0.10*(0.31)* [-0.71,0.50]	0.10*(0.29)* [-0.46,0.67]
Time squared	**-0.05*(0.01)* [-0.07,-0.02]**	**-0.01*(0.01)* [-0.04,0.01]**	-0.01*(0.01)* [-0.04,0.01]	**0.03*(0.01)*** [0.01,0.06]	0.00*(0.01)* [-0.03,0.02]
LEVEL 2					
Intercept	**55.01*(1.36)* [52.35,57.66]**	**67.78*(1.49)* [64.85,70.71]**	**24.31*(1.66)* [21.05,27.57]**	**30.50*(1.56)* [27.44,33.56]**	**21.32*(1.88)* [17.63,25.02]**
Person-average solitude	0.09*(0.09)* [-0.09,0.26]	-0.05*(0.10)* [-0.25,0.14]	0.04*(0.11)* [-0.18,0.26]	0.04*(0.10)* [-0.16,0.24]	0.15*(0.13)* [-0.09,0.40]
Person-avg. sol. desire	-0.13*(0.07)* [-0.27,0.01]	0.00*(0.08)* [-0.17,0.16]	-0.06*(0.09)* [-0.24,0.12]	-0.12*(0.09)* [-0.29,0.05]	**-0.27*(0.10)* [-0.48,-0.07]**
Person-avg working	0.15*(0.10)* [-0.04,0.34]	-0.09*(0.11)* [-0.31,0.12]	0.06*(0.12)* [-0.18,0.29]	0.01*(0.11)* [-0.21,0.23]	0.07*(0.14)* [-0.20,0.33]
Person-avg pas. leisure	-0.03*(0.06)* [-0.15,0.10]	0.01*(0.07)* [-0.12,0.15]	-0.03*(0.08)* [-0.18,0.12]	0.02*(0.07)* [-0.12,0.16]	-0.03*(0.09)* [-0.20,0.14]
Age	-0.01*(0.20)* [-0.40,0.37]	-0.09*(0.22)* [-0.52,0.34]	-0.10*(0.24)* [-0.58,0.38]	-0.21*(0.23)* [-0.65,0.24]	-0.08*(0.28)* [-0.62,0.46]

Ethnicity	-3.98*(3.24)* [-10.33,2.37]	4.22*(3.60)* [-2.84,11.28]	-6.36*(4.02)* [-14.25,1.53]	-1.00*(3.77)* [-8.38,6.39]	**-10.72*(4.55)* [-19.63,-1.80]**
Education	-1.01*(3.14)* [-7.18,5.15]	**-7.05*(3.50)* [-13.92,-0.18]**	1.61*(3.91)* [-6.07,9.28]	1.38*(3.66)* [-5.80,8.55]	-1.74*(4.41)* [-10.39,6.92]
Gender	2.33*(2.98)* [-3.52,8.17]	-1.19*(3.33)* [-7.72,5.33]	4.13*(3.72)* [-3.16,11.41]	6.53*(3.47)* [-0.28,13.34]	0.16*(4.18)* [-8.05,8.36]
Retirement status	7.48*(4.03)* [-0.42,15.37]	7.52*(4.53)* [-1.37,16.41]	-3.80*(5.03)* [-13.67,6.07]	-4.91*(4.71)* [-14.15,4.33]	-6.76*(5.66)* [-17.86,4.35]
Relationship status	3.39*(3.10)* [-2.68,9.46]	3.99*(3.43)* [-2.74,10.72]	-3.56*(3.82)* [-11.04,3.93]	-4.60*(3.57)* [-11.60,2.40]	-6.79*(4.31)* [-15.25,1.67]
Perceived social status	1.59*(1.04)* [-0.45,3.63]	**2.41*(1.18)* [0.09,4.72]**	-1.63*(1.29)* [-4.16,0.90]	-1.19*(1.21)* [-3.57,1.19]	-0.53*(1.52)* [-3.51,2.45]
INTERACTIONS					
Age x Current solitude	-0.03*(0.09)* [-0.20,0.14]	-0.03 *(0.08)* [-0.19,0.13]	0.02*(0.10)* [-0.18,0.21]	0.07*(0.09)* [-0.10,0.24]	-0.09*(0.11)* [-0.30,0.13]
Age x Curr. sol. desire	**0.23*(0.09)* [0.05,0.41]**	**0.20 *(0.10)* [0.00,0.40]**	-0.11*(0.12)* [-0.34,0.13]	-0.07*(0.11)* [-0.28,0.15]	-0.09*(0.12)* [-0.32,0.14]
Work. x Curr. sol. des.	-0.94*(2.05)* [-4.96,3.07]	-1.08 *(1.94)* [-4.88,2.73]	3.86*(2.16)* [-0.38,8.10]	1.11*(2.15)* [-3.10,5.31]	0.20*(2.03)* [-3.77,4.17]
P. leis. x Curr. sol. des.	0.69*(1.33)* [-1.92,3.29]	**2.89 *(1.25)* [0.45,5.33]**	-0.32*(1.38)* [-3.03,2.40]	-1.64*(1.37)* [-4.34,1.05]	-1.93*(1.30)* [-4.48,0.61]
Time x Curr. sol. desire	-0.39*(0.65)* [-1.66,0.89]	0.04 *(0.60)* [-1.13,1.22]	0.47*(0.66)* [-0.83,1.77]	1.25*(0.66)* [-0.05,2.55]	-0.09*(0.62)* [-1.30,1.12]
$Time^2$ x Curr. sol. des.	0.01*(0.03)* [-0.04,0.06]	-0.01 *(0.03)* [-0.06,0.04]	-0.02*(0.03)* [-0.07,0.04]	-0.03*(0.03)* [-0.09,0.02]	0.01*(0.03)* [-0.04,0.06]
DEVIANCE REDUCT.	$X^2(10)$ = 15.26	***X*²*(10)* = 22.45***	***X*²*(10)* = 21.04***	***X*²*(10)* = 28.98****	***X*²*(10)* = 42.76*****

Note. We also examined whether *current aloneness* or *desire to be alone* may explain the reported *age x solitude desire* interactions predicting high and low arousal positive affect. Unlike solitude desire, aloneness and desire to be alone showed no age interactions; hence, we report models without these two variables.

Figures

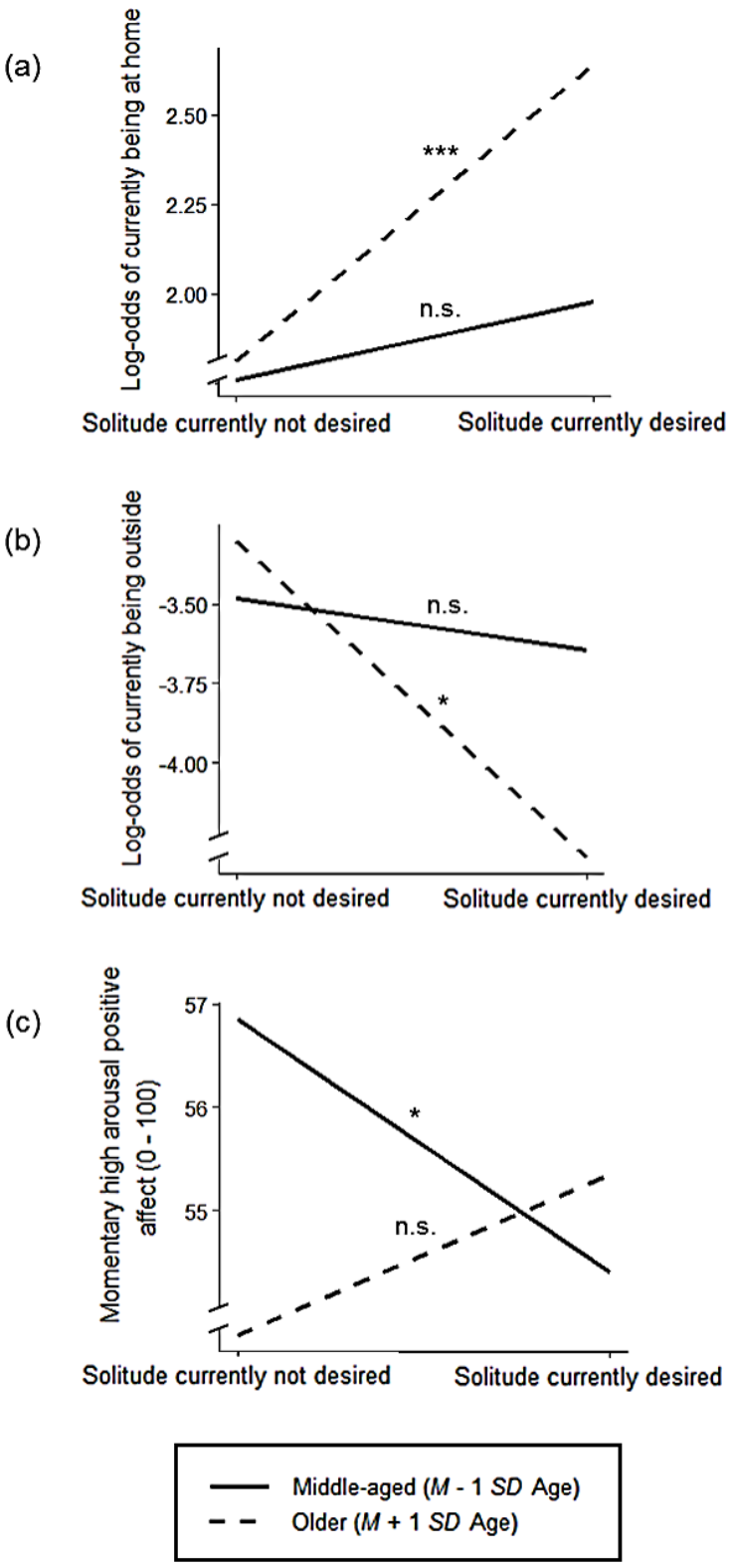
(a)
Log-odds of currently being at home
2.50
2.25
2.00
***
n.s.
Solitude currently not desired
Solitude currently desired
(b)
Log-odds of currently being outside
-3.50
-3.75
-4.00
n.s.
*
Solitude currently not desired
Solitude currently desired
(c)
Momentary high arousal positive affect (0 - 100)
57
56
55
*
n.s.
Solitude currently not desired
Solitude currently desired
Middle-aged (M - 1 SD Age)
Older (M + 1 SD Age)

Figure 1. Associations of Momentary Solitude Desire with Current Location (Home, Outside) and High Arousal Positive Affect in Midlife and Older Adulthood. Graphs show simple slopes for interactions between current solitude desire and age in predicting location and affect outcomes. Graphs (a) and (b) show log-odds of currently being at home (a) and of currently being outside (b) when solitude is currently desired versus not desired. Positive log-odds values indicate that the participant is more likely to be in that location (at home, outside) than not in that location at that moment. Graph (c) shows momentary high arousal positive affect (on a 100-point scale) reported when solitude is currently desired versus not desired. Solid lines denote participants aged one standard deviation below the mean age (middle-aged adults, 58.4 years), and dotted lines denote participants aged one standard deviation above the mean age (older adults, 75.8 years). Age was measured on a continuous scale; simple slopes for the two age groups are shown for illustrative purposes.

Supplementary Materials

Supplementary Materials: Data Analytic Approach

- *Model 1:* Currently at home (1 = at home, 0 = not at home); hierarchical logistic model

- *Model 2:* Currently outside (1 = outside, 0 = not outside); hierarchical logistic model

- *Model 3:* Current high arousal positive affect (100-point scale); hierarchical linear model

- *Model 4:* Current low arousal positive affect (100-point scale); hierarchical linear model

- *Model 5:* Current high arousal negative affect (100-point scale); hierarchical linear model

- *Model 6:* Current low arousal negative affect (100-point scale); hierarchical linear model

- *Model 7:* Current loneliness (100-point scale); hierarchical linear model

All models were of the following form:

Level 1 (momentary level)

$$OUTCOME_{ij} = b_{0j} + b_{1j}CURR\_SOL_{ij} + b_{2j}CURR\_SOL\_DES_{ij} + b_{3j}CURR\_WORK_{ij} +$$
$$b_{4j}CURR\_LEISURE_{ij} + b_{5j}TIME_{ij} + b_{6j}TIME\_SQ_{ij} +$$
$$b_{7}j(CURR\_SOL\_DES_{ij} \text{ x } CURR\_WORK_{ij}) + b_{8}j(CURR\_SOL\_DES_{ij} \text{ x } CURR\_LEISURE_{ij}) +$$
$$b_{9}j(CURR\_SOL\_DES_{ij} \text{ x } TIME_{ij}) + b_{10}j(CURR\_SOL\_DES_{ij} \text{ x } TIME\_SQ_{ij}) + e_{ij}$$

Level 2 (person level)

$$b_{0j} = \gamma_{00} + \gamma_{01}AVG\_SOL_j + \gamma_{02}AVG\_SOL\_DESIRE_j + \gamma_{03}AVG\_WORK_j + \gamma_{04}AVG\_LEISURE_j +$$
$$\gamma_{05}AGE_j + \gamma_{06}ETHNICITY_j + \gamma_{07}EDUCATION_j + \gamma_{08}GENDER_j +$$
$$\gamma_{09}RETIREMENT_j + \gamma_{010}RELATIONSHIP_j + \gamma_{011}SOCIAL\_STATUS_j + u_{0j}$$

$$b_{1j} = \gamma_{10} + \gamma_{11}AGE_j + u_{1j} \qquad b_{2j} = \gamma_{20} + \gamma_{21}AGE_j + u_{2j} \qquad b_{3j} = \gamma_{30} \qquad b_{4j} = \gamma_{40}$$

$$b_{5j} = \gamma_{50} \qquad b_{6j} = \gamma_{60} \qquad b_{7j} = \gamma_{70} \qquad b_{8j} = \gamma_{80} \qquad b_{9j} = \gamma_{90} \qquad b_{10j} = \gamma_{100}$$

Key variables (all variables grand mean centered)

- *CURR_SOL:* current solitude (1 = in solitude, 0 = not in solitude)

- *CURR_SOL_DES:* current solitude desire (1 = solitude desired, 0 = solitude not desired)

- *CURR_WORK:* current working activity (1 = working, 0 = not working), grand mean centered

- *CURR_LEISURE:* current passive leisure activity (1 = passive leisure, 0 = not passive leisure)

- *TIME:* current time (hours since 4am) - *TIME_SQ:* current time squared - *AGE* (years)

- *AVG_SOL:* person-average solitude (percentage of occasions in solitude)

- *AVG_SOL_DESIRE:* person-average solitude desire (percentage of occasions desiring solitude)

- *AVG_WORK:* person-average working (percentage of occasions working)

- *AVG_LEISURE:* person-average passive leisure (percentage of occasions in passive leisure)

Hypothesis testing

Hypothesis 1: Solitude-seeking will be associated with greater likelihood of being at home and lesser likelihood of being outside: b_{2j} coefficient for *Models 1-2*

Hypothesis 2: Solitude-seeking will be associated with decreased positive affect and increased negative affect and loneliness: b_{2j} coefficient for *Models 3-7*

Hypothesis 3: Compared to middle-aged adults, older adults will be more likely to be either at home or outdoors when seeking solitude: γ_{21} coefficient for *Models 1-2*

Hypothesis 4: Compared to middle-aged adults, older adults will show lesser decreases in positive affect, and lesser increases in negative affect and loneliness, when seeking solitude: γ_{21} coefficient for *Models 3-7*

Supplementary Materials Table 1: Situation-Level (Within-Person) Variable Descriptives by Solitude Situation and by Solitude Desire

	In solitude (n = 2013)	Not in solitude (n = 1182)	Difference test (In solitude vs. not in solitude)	Desiring solitude (n = 2139)	Not desir. solitude (n = 1056)	Difference test (Desiring vs. not desiring solitude)
Percent occasions in solitude				**80.7%**	**27.1%**	***X²(1)* = 870.89*** **
Percent occasions desiring solitude	**85.8%**	**34.9%**	***X²(1)* = 870.89*** **			
Percent occasions home	**88.6%**	**62.9%**	***X²(1)* = 299.17*** **	**85.0%**	**66.8%**	***X²(1)* = 141.27*** **
Percent occasions outside	**4.3%**	**11.3%**	***X²(1)* = 55.83*** **	**4.6%**	**11.6%**	***X²(1)* = 51.58*** **
Percent occasions working	8.9%	9.4%	*X²(1)* = 0.19	8.9%	9.5%	*X²(1)* = 0.25
Percent occasions passive leisure	**37.5%**	**24.1%**	***X²(1)* = 60.57*** **	**34.2%**	**29.4%**	***X²(1)* = 7.21** **
Mean high arousal positive affect *(SD)*	**52.6 *(19.9)***	**57.2 *(18.7)***	***t(2599)* = -6.55*** **	**53.0 *(19.6)***	**57.0 *(19.2)***	***t(2146)* = -5.59*** **
Mean low arousal positive affect *(SD)*	67.3 *(20.1)*	68.5 *(19.4)*	*t(2546)* = -1.65	67.5 *(19.8)*	68.4 *(19.9)*	*t(2097)* = -1.28
Mean high arousal negative affect *(SD)*	**22.4 *(21.6)***	**24.9 *(21.5)***	***t(2516)* = -3.13** **	**22.2 *(21.5)***	**25.6 *(21.2)***	***t(2124)* = -4.33*** **
Mean low arousal negative affect *(SD)*	29.4 *(21.7)*	30.6 *(20.9)*	*t(2550)* = -1.49	**28.7 *(21.4)***	**32.2 *(21.3)***	***t(2115)* = -4.41*** **
Mean loneliness *(SD)*	20.4 *(23.6)*	21.1 *(22.0)*	*t(2616)* = -0.86	**18.5 *(22.1)***	**25.0 *(24.2)***	***t(1937)* = -7.33*** **

Note. *t* tests use Welch's *t* for unequal variances. n = 3195 assessments. ***p < .001, **p < .01, *p < .05, †p < .1

Supplementary Materials Table 2: Intercorrelations of Person-Level Variables and of Person-Averaged Situation-Level Variables

		2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1.	Age	.10	.12	-.14	**.54**	.00	.10	.10	.07	-.04	**.21**	.08	.10	-.17	**-.25**	-.17	**-.24**	-.13
2.	Ethnicity		**.24**	.04	-.07	**-.30**	.19	.14	-.09	-.07	-.05	-.14	.07	-.11	.06	-.11	-.04	.07
3.	Education			-.00	-.04	-.03	.15	.09	.11	**-.29**	.13	-.10	-.16	-.02	-.01	-.14	-.12	.12
4.	Gender				.12	-.19	.03	-.06	-.03	-.17	.01	.09	-.03	.10	.19	-.03	-.16	-.04
5.	Retirement status					-.01	.06	.10	.08	-.06	**.28**	**.22**	.19	-.12	-.19	-.18	-.33	-.09
6.	Relationship status						.06	**-.29**	-.15	-.01	.08	**.21**	.16	-.08	-.14	-.08	.09	.01
7.	Perceived social status							-.04	-.07	-.05	-.02	.15	**.27**	**-.25**	-.18	-.18	-.17	-.02
8.	Mean time in solitude								**.69**	**-.26**	**.38**	-.18	-.12	-.03	.00	-.06	-.15	.17
9.	Mean desire for solitude									**-.33**	**.35**	-.19	-.11	-.04	-.10	**-.22**	-.08	.09
10.	Mean time outside										**-.55**	.03	.08	-.10	-.09	.16	.16	-.16
11.	Mean time at home											.05	.01	-.05	-.19	-.16	-.15	.04
12.	Mean high arousal positive affect												**.62**	**-.26**	**-.38**	-.14	.04	-.07
13.	Mean low arousal positive affect													**-.68**	**-.58**	**-.46**	-.15	-.04
14.	Mean high arousal negative affect														**.77**	**.72**	.15	-.03

15.	Mean low arousal negative affect	**.59**	.10	.03
16.	Mean loneliness		.16	.02
17.	Mean time working			.05
18.	Mean time in passive leisure			

Note. N = 90-100 individuals. Age is in years; gender coded 1 = female, 0 = male; ethnicity coded 1 = European, 0 = non-European; education coded 1 = some post-secondary, 0 = no post-secondary, retirement status coded 1 = retired, 0 = not retired, relationship status coded 1 = in a relationship, 0 = not in a relationship. Perceived social status is a score on a 10-point scale. Mean time in solitude, desire for solitude, time outside, time at home, time working, and time in passive leisure are the percentage of occasions when the individual was in the respective situation/location. Affect dimensions are person-averages of momentary assessments (100-point scale). N ranges from 90 to 100 individuals due to missing data for age (N = 5), relationship status (N = 2), and perceived social status (N = 5). Bolded values are significant at α = .05.

Supplementary Materials Table 3: Situation-Level Variable Descriptives by Age Group

	Middle-aged adults (age 50-67 yrs, *N* = 47)	Older adults (age 68-85 yrs, *N* = 48)	Difference test (middle-aged vs. older adults)
Percentage of occasions in solitude	60.5%	67.4%	*t(90)* = -1.51
Percentage of occasions desiring solitude	66.9%	69.7%	*t(92)* = -0.51
Percentage of occasions at home	76.2%	82.7%	*t(90)* = -1.83†
Percentage of occasions outside	7.5%	5.8%	*t(93)* = 1.00
Mean high arousal positive affect	54.0 *(13.2)*	55.8 *(14.5)*	*t(92)* = -0.66
Mean low arousal positive affect	66.4 *(14.2)*	69.1 *(16.0)*	*t(92)* = -0.88
Mean high arousal negative affect	26.4 *(15.4)*	22.2 *(16.9)*	*t(93)* = 1.28†
Mean low arousal negative affect	33.3 *(14.4)*	28.0 *(16.8)*	*t(91)* = 1.66†
Mean loneliness	23.0 *(18.3)*	19.8 *(20.5)*	*t(92)* = 0.80
Percentage of occasions working	**12.6%**	**5.5%**	***t(73)* = 2.34***
Percentage of occasions passive leisure	33.6%	30.3%	*t(90)* = 0.68

Note. t tests use Welch's *t* for unequal variances. *n* = 3195 assessments, *N* = 95 individuals All variables are person-means for each age group. Affect variables are on a scale from 0 to 100. ***$p < .001$, **$p < .01$, *$p < .05$, †$p < .1$